

SCC #8 APPROVED 6 APR 99
MIL-STD-2045-47001B
Management of TCP Connections
(Add new paragraph to NOTES)

6.3 Management of TCP Connections. When TCP is used to transport the MIL-STD-2045-47001 application layer protocol over low baud rate CNR networks, the overhead for opening and closing connections can contribute substantially to the offered load presented to the CNR network. The following conventions for the management of TCP connections used to transport the application layer protocol are offered to allow the amount of overhead generated as the result of opening and closing TCP connections to be controlled.

- a. When a 47001 message becomes available for transport, a TCP connection shall be opened to the destination if a connection to the destination hasn't already been established.
- b. An established TCP connection to a given destination shall be gracefully closed if no activity (transmitted or received data) occurs on the connection within some configurable time period of the most recent activity on that connection.
- c. If a connection already exists to a given destination and an additional connection offer is received from that same destination, the older connection shall be closed at the end of the normal completion of any pending message transports such that only one connection is maintained and utilized for each destination.
- d. MIL-STD-2045-47001 messages shall be offered for transport over the TCP connection to the specified destination in the order established by the Message Precedence field of the MIL-STD-2045-47001 Application Header. If a higher priority message becomes available for transport to a destination while a lower priority message is in the process of being transported to the same destination, the transport of the higher priority message shall begin immediately after the transport of the lower priority message is completed. Lower priority messages that have not already been offered for transport on the connection, should not be offered for transport until after higher priority messages have been offered for transport on the connection.
- e. The number of connections/destinations that can be utilized simultaneously by a single MIL-STD-2045-47001 application should be limited to a configurable number. Once this limit is reached there are two reasons additional connection might need to be established: either a message becomes available locally for transport to an additional destination, or a connection offer is received from a new remote source.
 - (1) In the case of a locally generated message to an additional destination, the LRA (Least Recently Active) connection, that is not currently being used for the transport of messages, should be closed prior to the establishment of a connection to the new destination. If all connections are actively being used, then the new message transport request should be discarded and treated as a transport failure.
 - (2) In the case that a connection offer is accepted from an additional remote source, the LRA connection that is not currently being used for the transport of messages should be closed. If all connections are actively being used, then the new recently accepted connection should be abruptly closed. Abruptly closing the newly accepted connection will terminate any pending transmissions from the remote source and inform the remote source that any pending messages were not transported successfully.